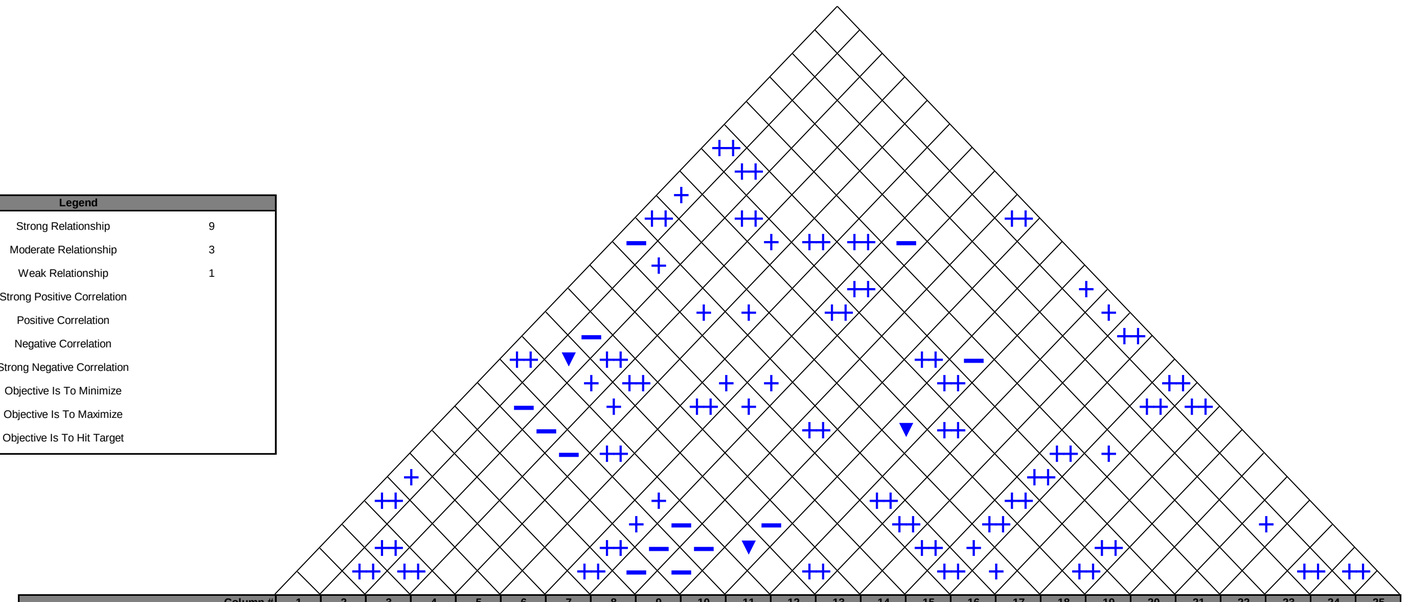
Legend		
⊙	Strong Relationship	9
O	Moderate Relationship	3
▲	Weak Relationship	1
++	Strong Positive Correlation	
+	Positive Correlation	
−	Negative Correlation	
▼	Strong Negative Correlation	
▼	Objective Is To Minimize	
▲	Objective Is To Maximize	
X	Objective Is To Hit Target	



Row #	Max Relationship Value in Row	Relative Weight	Weight / Importance	Customer Requirements \ Engineering Requirements	1 Apply shotcrete in a timely manner	2 Scan drift face accurately	3 Position end-effector accurately for scanning	4 Record position and radiation levels accurately	5 Position end-effector accurately for spraying	6 Measure shotcrete thickness	7 Navigate to desired location	8 Ackerman steering for trailer	9 Avoid obstacles by user-defined distance	10 Perform scanning task faster than current practices	11 Perform shotcreting task faster than current practices	12 Record radiation measurements with greater accuracy	13 Record radiation measurement positions with greater accuracy	14 Measure shotcrete thickness with greater accuracy than current practices	15 Generate registered point cloud of mine environment	16 Minimize safety risk when present in a mine	17 Reduce environmental impact	18 Generate motion trajectories	19 Perform radiation scanning motions	20 Perform shotcrete application motions	21 Estimate thickness	22 Determine robot location	23 Modular design	24 Proper documentation	25 Adhere to ethical standards throughout design process
				Column #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
				Direction of Improvement: Minimize (▼), Maximize (▲), or Target (x)	▼	▲	▲	▲	▲	x	x	x	x	▼	▼	▲	▲	▲	x	▼	▼	x	x	x	x	x	x	x	x
1	9	6.7	10.0	Proof of concept hardware prototype	⊙	⊙	⊙	⊙	⊙	⊙	⊙								⊙				⊙	⊙					
2	9	5.3	8.0	Autonomous scanning		⊙	⊙	⊙		⊙				⊙		O	⊙			▲		⊙	⊙						
3	9	6.7	10.0	Autonomous shotcreting	⊙				⊙	O					⊙			O		▲		⊙		⊙					
4	9	6.0	9.0	Autonomous navigation	⊙	▲					⊙	⊙							O	O						⊙			
5	9	5.3	8.0	Obstacle avoidance	O	O						⊙	O							⊙						⊙			
6	9	4.0	6.0	Improved efficiency	⊙						▲			⊙	⊙							O		⊙					
7	9	4.0	6.0	Improved accuracy		⊙	⊙		⊙	⊙						⊙	⊙	⊙	⊙	▲	▲	O				⊙			
8	9	3.3	5.0	3D Reconstruction	O	⊙				⊙								O	⊙	▲	▲					⊙			
9	9	6.7	10.0	Worker safety	▲			▲	▲	⊙						▲	O	⊙	▲	⊙	O		⊙	⊙		O			⊙
10	9	6.7	10.0	Environmental protection				O								▲	▲	O	▲	O	⊙		▲						⊙
11	9	6.0	9.0	Functioning prototype	▲	▲	⊙	O	⊙	⊙	⊙	O	⊙						⊙			⊙	⊙	⊙		⊙	O		
12	9	4.7	7.0	Accurate localization			⊙			⊙	O						O	⊙	⊙							⊙			
13	9	6.7	10.0	Novel design	▲	▲		▲	▲	⊙	▲			O	O	O	▲	⊙	O			⊙	⊙	O		⊙	O		
14	9	6.7	10.0	Use of engineering principals						▲		O	O			▲	▲	▲			▲	⊙		O		⊙	⊙	⊙	O
15	9	5.3	8.0	Resarch oriented															⊙			O	▲			▲	⊙	⊙	▲
16	9	4.7	7.0	Publications						O								O	O			⊙			▲	⊙		O	
17	9	4.7	7.0	Continuation opportinuty						▲	▲								O			O	▲			O	⊙	⊙	
18	9	6.7	10.0	Ethical practices														O			⊙						O	O	⊙
				Target or Limit Value	15min	±10mm	±50mm	±50mm^2	±25mm	±10mm	±500mm	±10deg	±100mm	30min	20min	±50mm^2	±25mm	±50mm	±10mm					±10mm	±100mm				
				Difficulty (0=Easiest to Accomplish, 10=Most Difficult)	7	7	6	5	6	8	7	5	7	6	5	3	1	2	9	8	4	8	5	5	6	10	7	4	5
				Max Relationship Value in Column	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	1	9	9	9	9
				Weight / Importance	255.3	208.7	240.0	159.3	223.3	435.3	197.3	140.0	90.0	104.0	116.0	92.0	138.0	288.7	349.3	165.3	154.0	378.0	298.7	310.0	4.7	465.3	208.0	184.0	205.3
				Relative Weight	4.7	3.9	4.4	2.9	4.1	8.0	3.6	2.6	1.7	1.9	2.1	1.7	2.6	5.3	6.5	3.1	2.8	7.0	5.5	5.7	0.1	8.6	3.8	3.4	3.8